SESSION 8 – ENVIRONMENTAL ISSUES

CHAIR
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TITLE OF PRESENTATIONS AND SPEAKERS
"TRANSMAP: An Integrated Real-Time Environmental Monitoring and Forecasting System for Highways and Waterways in Rhode Island" by Malcolm Spalding, University of Rhode Island

"Hawaii Pilot Project to Build a National Early Warning System for Invasive Species" by Donna Turgeon, Michelle Harmon, and Gary Matlock; National Ocean Service, NOAA

"Key Environmental Issues in a Sound MTS Strategy" by Tom Chase, American Association of Ports Authorities and Tom Bigford, NMFS, NOAA

"Monitoring of Hydrodynamics, Sediment Transport, and Water Quality in the Port of New York / New Jersey: Preliminary Results" by Michael Bruno, Stevens Institute of Technology; Kelly Rankin, Stevens Institute of Technology; Frank McDonough, Nation's Port; and Robert Chant, Rutgers University

SUMMARY

TRANSMAP: An Integrated Real-Time Environmental Monitoring and Forecasting System for Highways and Waterways in Rhode Island

Malcolm Spalding provided a presentation on TRANSMAP (Transportation Mapping and Analysis Program), an integrated, real-time environmental monitoring and forecasting system for highways and waterways in Rhode Island. The resulting environmental data is critical for effective operation, management, and evaluation of various land and marine transportation systems. Selected data and model products will be available to the public and transportation user groups through the internet.

Hawaii Pilot Project to Build a National Early Warning System for Invasive Species

In her presentation, Donna Turgeon outlined the details behind the Hawaii Pilot Project to build a national early warning system for invasive species Once implemented, this project will provide managers and scientists with the ability to assess the risk of coastal exotic species becoming invasive, impacting native wildlife, and natural ecosystems, as well as economic and human health. In doing so, it has two main objectives: (1) identify the occurrence of exotic species as early as possible, and (2) quantify possible risks of exotic species. The complications for this project include a lack of consensus on hardware platforms, operating systems, network protocol, and data format. She stressed that, in order for this project to succeed, there must be a consensus on interoperability and an infrastructure to

support it. The system should prove extremely beneficial in providing automatic alerts for exotic/invasive species, GIS maps, ecological forecasts, and many other products.

Key Environmental Issues in a Sound MTS Strategy

Research and technology issues are very important to the environmental side of MTS. NOAA's ability to provide environmental services hinges on solid scientific information, but that essential basis for technical comments, consultation decisions, and environmental advice is often lacking. Business decisions based on incomplete knowledge pose economical, litigation, and ecological risks.

Key research needs include information on the life history and ecological needs of species occupying ports, harbors, and transportation corridors; specific information on migratory species whose occasional visits could offer solutions to scheduling challenges; and improved knowledge about animal behavior to predict the reaction of marine mammals, sea turtles, fish, and other species to underwater noise, turbidity barriers, hydrologic change, and other environmental alterations.

Key technology needs include careful consideration of the interplay between vessel designs, port configurations, and potential impacts to NOAA trust resources. In some ports, shallow-draft vessels could obviate the need for recurring maintenance dredging. Greater use of technology could narrow tolerances for dredging, thereby reducing the need to "over-dredge" for safety considerations. Technology can also help with environmental monitoring to track sediment plumes, water chemistry, and other basic factors that may improve confidence in our decisions.

Much of this relates to the on-going debate about the use of regulatory "windows" to dictate when dredging and other activities can occur or should be avoided. Improved information and full application of that information in an acceptable manner (risk averse, economically feasible, politically justifiable, etc) might offer more flexibility than the MTS community now enjoys when scheduling in-water projects.

As long as these types of R&T needs remain, efforts to streamline decision making will be frustrating. With sufficient information, more efficient permit review procedures and reasonable expectations can yield improved predictability to the MTS community.

Monitoring of Hydrodynamics, Sediment Transport, and Water Quality in the Port of New York / New Jersey: Preliminary Results

The annual maintenance dredging requirement in New York Harbor is almost four million cubic yards. Authorized deepening projects, some of which are now underway, will raise the requirement for disposal of dredged material to more than 150 million cubic yards over the life of the projects. However, it is no secret that the silty material, which makes up much of the harbor's bottom, is encumbered by a complex mix of contaminants resulting from historic and current pollution sources. This contamination drastically limits disposal options for dredging projects. To meet the challenge of

managing this material, the region, and particularly the State of New Jersey, has adopted a tripartite approach to dredged material management. First the State of New Jersey declared that beneficial use of dredged materials shall be the preferred disposal option; and has developed a number of uses for these materials such as brownfields remediation. Second, the state along with the federal agencies, funded and oversaw the development of a number of innovative technologies for decontamination, processing, and use of dredged material, and for the reduction in siltation. Finally the state, along with the State of New York, embarked on a toxics trackdown program designed to identify and eliminate the sources of contamination. This latter program, for which more than $30 million has been dedicated by the two states, is operated in conjunction with the Harbor Estuary Program for New York Harbor (HEP) and is a major component of the HEP Contaminant Assessment and Reduction Program (CARP). Tom Bigford's presentation focused primarily on CARP.

In New Jersey, hydrodynamic and water and suspended sediment quality studies are underway in Newark Bay, the Arthur Kill, and Kill van Kull. This work is coordinated with water and sediment quality sampling studies undertaken at the head-of-tide and within the tidal reaches of the major New Jersey tributaries that discharge into the NY-NJ Harbor. The goal of these synoptic studies is to develop an understanding on the contaminant transport pathways within this region of the estuary. The program uses a combination of three (3) fixed mooring stations, shipboard measurements at specified locations, and shipboard transects throughout the area. Measurements include current profiles using a towed Acoustic Doppler Current Profiler; conductivity-temperature-depth measurements using a CTD system; measurements of turbidity using an Optical Backscatter Sensor; measurements of suspended sediment concentration and particle size spectrum using a laser-based scatterometer; and water and suspended water quality measurements using Trace Organic Platform Samplers (TOPS) and grab sampling devices. Preliminary analysis of the data collected over the past year indicates that the Newark Bay/Kills system is influenced by several types of forcings, including tide, wind, and freshwater inflow. These highly variable forcings are responsible for dramatic variations in hydrodynamic and sediment transport characteristics, including for example, the connectivity of the system with the Hudson River. These transport characteristics play a significant role in determining the fate of sediment and water-borne contaminants in the Harbor. The presentation described the measurement program and data analysis, and offered preliminary conclusions regarding the dominant transport processes – and links to contaminant transport – within the Newark Bay/Kills system.